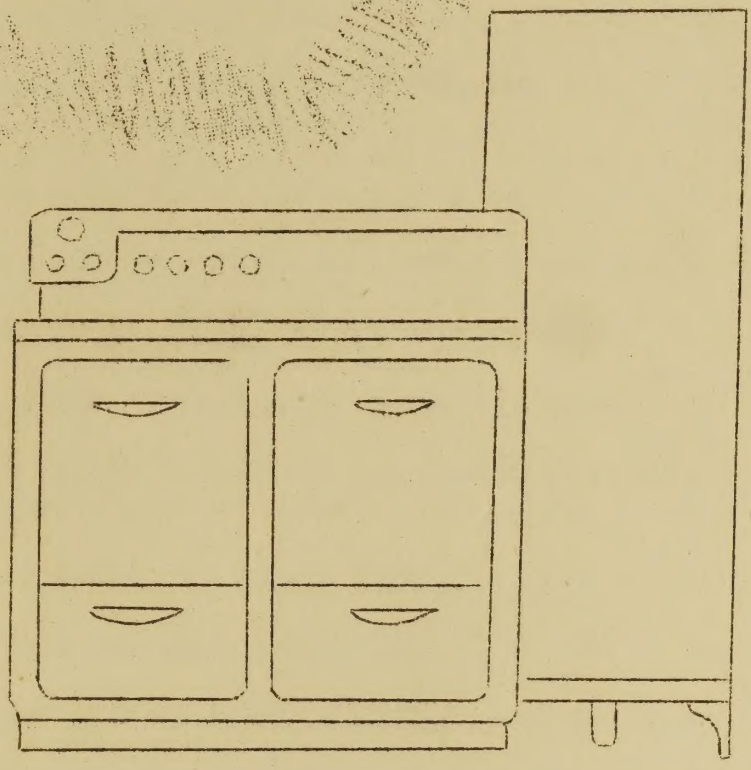
GO ALL ELECTRIC



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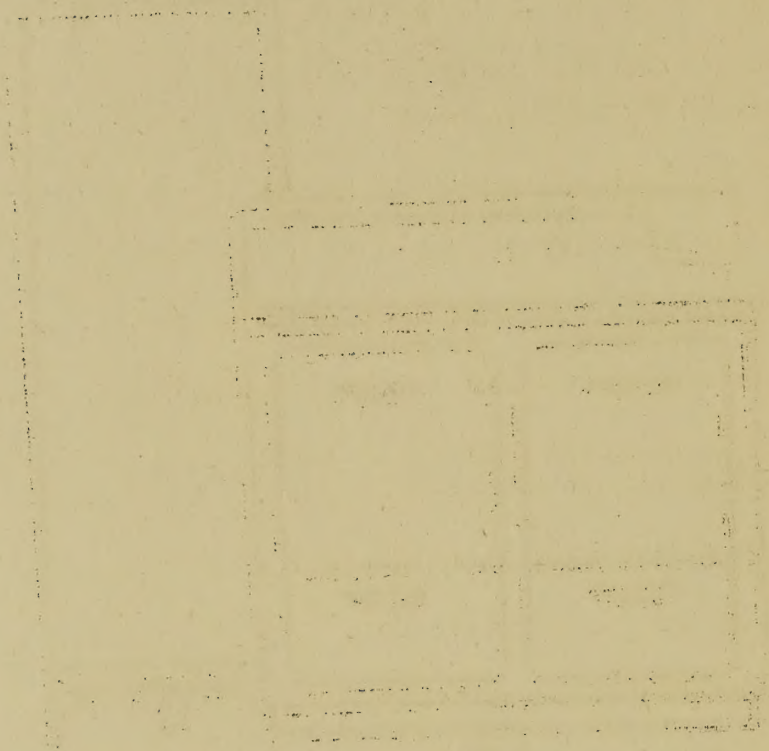

GO ALL ELECTRIC

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INTRODUCTION

A great many requests from managers and cooperative Boards of Directors have been received for information concerning cost of electricity and other fuels when used for cooking, refrigeration and water heating.

The comparative data sent to you by NEMA, showing the utilization efficiency ratio between electricity and LP Gas, have been converted into table form and may be used as a guide in arriving at an approximate comparison between the two fuels. Other fuel comparisons have been made on a strictly BTU basis without regard to the utilization efficiencies of the appliances.

Tables setting forth average KWH consumption of electric ranges and water heaters depending on the number of persons in the family are also included.

While we realize it is important to advise members concerning the comparative cost of electricity and other fuels it is even more essential that a constant program be carried on setting forth the numerous advantages of electric service and appliances.

We suggest further that the cooperative electric rate be given wide publicity calling special attention to the sharp decrease in cost per KWH as use increases. The last page in this pamphlet presents the story vividly and may be reproduced, using your cooperative rate.

COMPARATIVE FULL COSTS

The first step in comparing the probable costs of various fuels is to determine the cost of producing the same quantity of heat from each; the second step is to find out where the heat goes, and in particular, how much of it goes where it is wanted. This is often referred to as the utilization efficiency. It is convenient to express the total cost in dollars per million BTU. Thus, 500 BTU gas at $1.00 per thousand cu. ft. costs $2.00 per million, while natural gas of 1,000 BTU per cu. ft. at $1.50 per thousand cubic feet costs $1.50 per million BTU. Electricity at 1 cent per KWH costs $2.93 per million BTU. LP-Gas on the basis of 21,600 BTU per pound (pure Propane), at 10¢ per pound, costs $4.42 per million BTU. Kerosene may be assumed to produce 133,000 BTU per gallon. At 10¢ per gallon, it costs $0.75 per million BTU. Coal may be assumed to average 13,000 BTU per pound. At $10.00 per ton, it costs about 38 cents per million BTU.

The utilization efficiency of an electric range unit is a great deal higher than any of the other fuels, because direct contact is made between the cooking utensil and the range unit. According to data published by NEMA, the utilization efficiency ratio between LP-Gas and electricity varies, depending upon whether one is discussing cooking, water heating or refrigeration. The following ratios are recommended for LP-Gas and electricity by NEMA:

> "A reasonable estimate of the BTU ratio reached in actual home cooking is 3 to 1."
>
> "The BTU ratio for water heating may be regarded as 1.9 to 1."
>
> "It is conservative to consider the BTU Ratio in refrigeration as 10 to 1."

The above utilization efficiency ratios have been used in computing comparative cost tables in this pamphlet.

OTHER FACTORS THAT HAVE A BEARING ON MONTHLY OPERATING COST FOR COOKING

Many factors besides the rates charged in a given locality for the fuel affect the costs, such as the skill with which the range is handled, the amount of cooking done in insulated cookers or cooker wells with which most electric ranges are equipped, the relative amount of oven and top burner cooking, the amount of use of auxiliary equipment such as wood or coal burning stoves, water heater, electric toasters, percolators, etc., and variations of efficiency with use.

It cannot be emphasized too strongly that the bare fuel costs do not necessarily represent a true comparative cooking cost. Investment or expense in essential equipment required to provide service must be taken into consideration, such as tanks, valves, etc. Replacement of kindlers on gasoline stoves are recommended each month by one manufacturer, costing the consumer 40 cents for all. Items of this nature incidental to the operation of a range should of course be included in any cost comparison with electricity.

MEMBERS BENEFIT BY USING ONLY ONE SERVICE: ELECTRICITY

Cooperative electric rate structures offer the largest savings to members using electricity as their ONLY SERVICE, for all tasks. This is due to the sharp decrease in cost per KWH as use increases. Consequently, the more electricity used on the farm the greater the savings in comparison with other fuels. When members already use lights, radio, water pump and refrigerator, it costs very little more to use an electric range or water heater.

ONLY ELECTRICITY CAN DO ALL THE JOBS

Electricity renders many services which cannot be performed effectively by any one of the flame fuels. It can be used for lighting, home laundrying, cleaning, sewing, and entertainment. It's the modern energy for refrigeration, cooking, and water heating. It quietly, efficiently, and economically powers milking machines, milk coolers, brooders, water pumps and dozens of other pieces of farm equipment.

ONLY ELECTRICITY DOES ALL THESE JOBS BETTER

Electricity performs home tasks at the flick of a switch . . no wood, coal or oil to carry in . . no ashes to carry out . . no wicks to trim . . no fussing with matches nor expense of pilot lights . . no extra cleaning . . no unnecessary heat in kitchen. It keeps cooking utensils and kitchen cleaner . . saves homemakers' energy. Electricity eliminates dangerous flame around home, barn or brooder house.

MEMBERS WHO USE ONLY ELECTRICITY ELIMINATE THESE PROBLEMS

1. No worry about fuel supplies or deliveries.

2. Complicated service problems with several different organizations are eliminated.

3. No duplication of investment in service equipment.

COMPARATIVE COST TABLE

ELECTRICITY AND LP GAS COOKING

A reasonable estimate of the BTU ratio reached in actual home cooking is 3 to 1, that is - 3 BTU's of gas are required to do the same cooking operation as 1 BTU of electricity, according to "GAS HIGHLIGHTS" edited by NEMA. This ratio has been used in arriving at the following comparative costs of L/P Gas and electricity. Tables in this bulletin have been computed on the basis of 3415 BTU's per KWH and 21,600 BTU's per pound of LP Gas.

Cost of Electricity ¢ per KWH	Equivalent Cost of Gas	
	Cost Per Lb.	Cost Per Gallon
.7¢	1.5¢	6.3¢
1.0	2.1	8.9
1.5	3.2	13.9
2.0	4.2	17.8
2.5	5.25	22.3
3.0	6.3	26.7
4.0	8.4	35.6
5.0	10.5	44.5
6.0	12.6	53.4
7.0	14.7	62.3

Example:

If the cost of electricity is 2½¢ per KWH, L/P gas must retail at 5.25¢ per pound or 22.3¢ per gallon to be on an equal basis. A family of three would use 87 KWH per month for cooking (see chart Page 7) which is the equivalent of 41 pounds of L/P gas.

.025 x 87 = $2.18 cost of cooking with electricity
.0525 x 41 = $2.15 cost of cooking with L/P gas

Note: If the price of L/P gas is 8¢ per pound and the cost of electricity is 2½¢ per KWH the comparison would be as follows:

.025 x 87 = $2.18 cost of cooking with electricity
.08 x 41 = $3.28 cost of cooking with gas

COMPARATIVE OPERATING COST DATA
ELECTRICITY & LP-GAS

Water Heating

In actual practice, the BTU ratio for water heating may be regarded as 1.9 to 1, according to NEMA. That is, it requires 1.9 BTU's of LP-Gas to heat the same quantity of water as 1 BTU of electricity under actual home operating conditions. This comparison is based on the above ratio.

Cost of Electricity per KWH, ¢	Equivalent Cost of Gas	
	Cost Per Lb.	Cost Per Gallon
.5¢	1.6¢	7.0¢
.7	2.3	9.8
.8	2.6	11.
1.0	3.3	14.
1.5	5.0	21.
2.0	6.6	28.
2.5	8.2	35.
3.0	10.0	42.

Example:

A. Based on a farm family of three people (see table Page 8) approximately 245 KWH per month will be required for heating water in a modern electric heater. To heat the same amount of water in a gas water heater based on a ratio of 1.9 to 1 as recommended by NEMA, 74 lbs. will be required. Assuming that electricity is sold at 1¢ per KWH, which is equivalent to L/P gas at 3.3¢ per lb. or 14¢ per gallon, we have the following:

245 x .01 = $2.45 cost for electricity
74 x 3.3 = $2.44 cost for L/P gas

B. Note: If the price of L/P gas is 8¢ per pound and the cost of electricity is 1¢ per KWH, the comparison would be as follows:

245 x .01 = $2.45 cost of heating water with electricity
74 x .08 = $5.92 cost of heating water with gas

COMPARATIVE COST TABLE
ELECTRICITY AND LP-GAS
REFRIGERATION

Ratio 10 to 1, Electricity to L/P Gas

Cost of Electricity ¢ per KWH	Equivalent Cost of Gas	
	Cost per Pound	Cost Per Gallon
1.0¢	.64¢ 64/100	2.7¢
1.5	.95¢ 95/100	3.9
2.0	1.3	4.4
2.5	1.6	6.8
3.0	1.9	8.0
4.0	2.6	11.0
5.0	3.2	13.6
6.0	3.8	16.0
7.0	4.5	19.0
10.0	6.4	27.0

Example:

If the cost of electricity for refrigeration is 4¢ per KWH, L/P gas must retail at the low price of 2.6¢ per lb. or 11¢ per gallon to be on an equal basis with electricity. Literature distributed by L/P gas dealers concedes that 50 lbs. of L/P gas is the average consumption per month for a 6 cu. ft. refrigerator. New Electric refrigerators of the same capacity will require an average of 30 KWH's per month.

.026 x 50 = $1.30 cost for gas
.04 x 30 = $1.20 cost for electricity

Note: If the price of L/P gas is 8¢ per pound and the cost of electricity is 4¢ per KWH, the comparison would be as follows:

.08 x 50 lbs. = $4.00 cost of refrigerating with gas
.04 x 30 KWH = $1.20 cost of refrigerating with electricity.

ELECTRIC RANGE

OPERATION COST GUIDE

The following may be used as a guide to determine approximate operation cost of new, efficient electric ranges now being offered to the public through reliable trade channels.

These figures are based on averages secured by recognized sources from users under actual operating conditions in the home.

No. Persons in Family	Aver. KWH Per Mo. for Cooking Electrically	Cost for Cooking When Rate is ¢/KWH			Aver. Lbs. of LP Gas per Mo. for Cooking	*Cost for Cooking With LP Gas when Rate is:		
		2¢	2½¢	3¢		5¢	8¢	10¢
2	68	1.36	1.70	2.04	32	1.60	2.56	3.20
3	87	1.74	2.18	2.61	41	2.05	3.28	4.10
4	102	2.04	2.55	3.06	48	2.40	3.84	4.80
5	115	2.30	2.88	3.18	54	2.70	4.32	5.40
6	129	2.58	3.23	4.87	61	3.05	4.88	6.10

*The KWH's shown above as required for cooking electrically have been converted into equivalent pounds of LP-Gas on the basis of 3 BTUs of gas being required for one of electricity, as recommended by NEMA.

KILOWATT HOUR CONSUMPTION CHART

Storage Automatic Electric Water Heaters

Type of User	Number Persons Served Daily	Gallons of Hot (150°) Water Average Maximum Day	Average Monthly	KWH Per Mo.
MODEST Based on 8 gallons per person per day	2	25	540	146
	3	30	650	176
	4	38	795	204
	5	40	860	232
	6	48	1,035	280
AVERAGE Based on 12 gallons per person per day	2	35	755	204
	3	42	905	245
	4	48	1,035	280
	5	55	1,185	320
	6	65	1,395	377
GENEROUS Based on 20 gallons per person per day	2	50	1,160	314
	3	65	1,510	408
	4	80	1,850	500
	5	100	2,320	628
	6	120	2,780	752

COMPARATIVE EQUIPMENT COST
ELECTRIC & LP-Gas

ITEM	ELECTRIC			LP-GAS		
	Price	Instal-lation	Total	Price	Instal-lation	Total
Range-(fully insulated & oven control)	$135.25	*$15.00	$150.25	$122.50	$10.00	$132.50
Refrigerator (7 cu.ft. model)	$168.00	$ 3.50	$171.50	$192.50 (6 cu.ft. model)	$10.00	$202.50
Water Heater (50 gal.)	$121.50	*$12.50	$134.00	$120.50 (30 gal.)	$10.00	$139.50
			$455.75			$474.50

*Estimated installation cost of electric range and water heater are based on the assumption that service entrance has ample capacity to carry load.

NOTE: The cost of LP-Gas equipment varies considerably throughout the country. Many dealers feature low-priced ranges. However, the above can be used as a guide to determine the cost of electric and gas appliances of approximately the same quality. Prices obtained from dealers in District of Columbia.

LP-GAS UNDERGROUND TANK INSTALLATION
GENERALLY COSTS FROM $150 to $300

In areas where LP-Gas is sold at a low price per gallon, consumers are usually required to purchase under-ground tanks of capacities varying from 150 gallons to 300 gallons. The initial cost of such installations, exclusive of any appliance, generally averages $1.00 per gallon or $150 to $300. In comparing the cost of LP-Gas with electricity on a monthly basis, this initial investment can reasonably be depreciated over a period of ten years. In addition, interest should be computed on the amount invested in this equipment as there is no comparable investment when using electric service.

Example:

Depreciation:

$300 ÷ 10 = $30.00 Depreciation per year.
$30 ÷ 12 = $ 2.50 Depreciation per month

Interest at rate of 5%.

5% of $300 = $15.00 per year
$15 ÷ 12 = $ 1.25 per month

$2.50 plus $1.25 = $ 3.75 amount of depreciation and interest on a monthly basis, to be added to the cost of fuel when making a comparison of LP-Gas and Electricity.

ACTUAL USE - COMPARATIVE COST MONTHLY
ELECTRIC & LP-GAS

ELECTRIC RATE		
Rate	1st 40 KWH	$3.00
Next	40 KWH	.05
"	120 KWH	.02
*Excess		.015

*Controlled Water Heating Rate, 300 KWH @ 1¢ per KWH

LP-GAS RATE

LP-Gas rate - 8¢ per pound.

The installation of LP-Gas makes it necessary for co-op members to pay two service bills as gas cannot be used to operate Items 1 through 6 as shown below in the left hand column.

	KWH CONSUMED					
1. Lighting	25)					
2. Radio	8)					
3. Washing Machine	3)	70 KWH			Items 1 thru 6 . . 70 KWH	$4.50
4. Iron	5)	40 KWH @		$3.00		
5. Water Pump	20)	30 KWH @		1.50		
6. Miscellaneous	9)					
	70					
7. Refrigerator	30	10 KWH	5¢	.50	7. Refrigerator 50 lbs at 8¢ per lb.	4.00
		20 "	2¢	.40		
8. Range (Electric)	102	100 "	2¢	2.00	8. Range 41 lbs at 8¢ per lb.	3.28
		2 "	1¢	.02		
9. Water Heater	245	245 KWH	1¢	2.45	9. Water Heater $77\frac{1}{2}$ lbs at 8¢ per lb.	6.20
	447			$9.87		$17.98

ACTUAL USE COMPARATIVE COST
ELECTRIC & LP-GAS

COOPERATIVE ELECTRIC RATE			LP-GAS RATE
First	40	KWH @ $3.00 per mo.	Extremely low rate: 12¢ per gal. or 2.8¢ per pound
Next	40	" @ .04 per KWH	
*Next	300	" @ .01 per "	
Next	120	" @ .02 per "	
Over	500	" @ .01½ " "	

*Controlled Water Heating Rate

Consumption	KWH		
1. Lighting	25)		Items 1 through 6 require electricity even though LP gas is installed $4.20
2. Radio	8)		
3. Washing Machine	3)	70 KWH $4.20	
4. Iron	5)		
5. Water Pump	20)		
6. Misc.	9)		

		Gals.	Lbs.	
7. Refrigerator 30 KWH @	.61	11.8	50	1.41
8. Water Heater 245 KWH @	2.45	18.5	72½	2.22
9. Range - 102 KWH @	1.49	9.7	41	1.16
	$8.75			$8.99

Additional Hidden Costs of LP Gas:

In localities where LP-Gas is sold at a low rate it is generally required that the consumer make an investment of at least $200 in tanks, valves, piping, and safety apparatus. There is no comparable investment by members who go "All Electric." Assuming that this investment of $200 is depreciated over a period of ten years the cost per month for this service will be as follows: $1.67

Interest on the $200 investment at the rate of 4% is $8.00 per year or $.96 per month which must also be added to the cost of LP-Gas 96

Total $11.62

ADVANTAGES OF ELECTRICITY FOR COOKING

CLEAN: Electric heat is clean, sootless heat. Pans stay bright. The labor of cleaning walls, windows and curtains and the cost of redecoration is kept at a minimum.

SAFE: An electric range is as safe as an electric light. There is no flame. Ranges of reliable manufacturers are approved by the Underwriters' Laboratories of the National Board of Fire Underwriters.

HEALTHFUL: The controlled heat of the electric range makes possible the simplified cooking of foods so as to retain their flavor and natural goodness. Foods are cooked in their own natural juices or in minimum amounts of water to preserve their maximum nutritive value.

FAST: Electric heat is fast--and instantaneously available. At the turn of the switch heat is generated in the unit, and comes in direct contact with the cooking utensil. Surface units on the modern electric range are equipped with high wattage so that food may be quickly brought to cooking temperatures. Likewise the high wattage oven unit gives fast starting heat.

AUTOMATIC: The automatic timing device as made available on many electric ranges typifies the convenience and versatility of electricity as a fuel. With the use of this device, food can be placed in the oven, and the switches so set that the correct heat is turned on and off automatically at any desired interval. Thus, a homemaker may place a complete meal in the oven, leave when she wishes, and upon returning find a perfectly cooked, deliciously hot and appetizing meal.

ECONOMICAL: With the electric range there is little waste heat. It is accurately measured and controlled by the switch. Units are efficient and provide the heat needed for the particular cooking operation involved. Further, the moment the desired cooking temperature is reached, the switch may be turned to the lowest heat that will maintain cooking. The final stages of cooking may be completed on "Stored Heat," after the switch has been turned off.

EASILY AND ACCURATELY CONTROLLED: Electric heat is easily and accurately controlled because the same switch setting always provides the same cooking temperature. Electric ovens are thermostatically controlled which automatically switches the current on and off and thus constantly and accurately maintains the desired temperature.

SUGGESTIONS FOR COOPERATIVES'
"GO ALL ELECTRIC" ACTIVITIES

1. Inform members of comparative operating cost of electricity and other fuels.

2. Advise all dealers and cooperative personnel on comparative cost data.

3. Give wide publicity to electric range and water heating cost figures of actual satisfied users.

4. See that the services of a home economist are made available to all members who need additional information on electrical appliances. In the event a home economist is not available this important function may be performed by either an Electrification Adviser or a salesman employed by an electrical appliance dealer.

5. Point out to members who already own electric refrigerators that the installation of an electric range or water heater make it more economical for them to use complete electric service.

6. Promote adequate and safe wiring program to insure fullest use of electric power by members.

7. Continue efforts to reduce installation cost of electric range and water heater. When members already have lights, radios, small appliances and a refrigerator, it costs very little to use either an electric range or electric water heater.

   a. Make installation for dealers at a specified rice.

   b. Arrange an agreement between dealer and electrical contractor for a reasonable fixed price on all installations.

8. Demonstrate to members that they are not just buying a fuel, they are buying a service and that electric service has more advantages to offer than just a plain fuel.

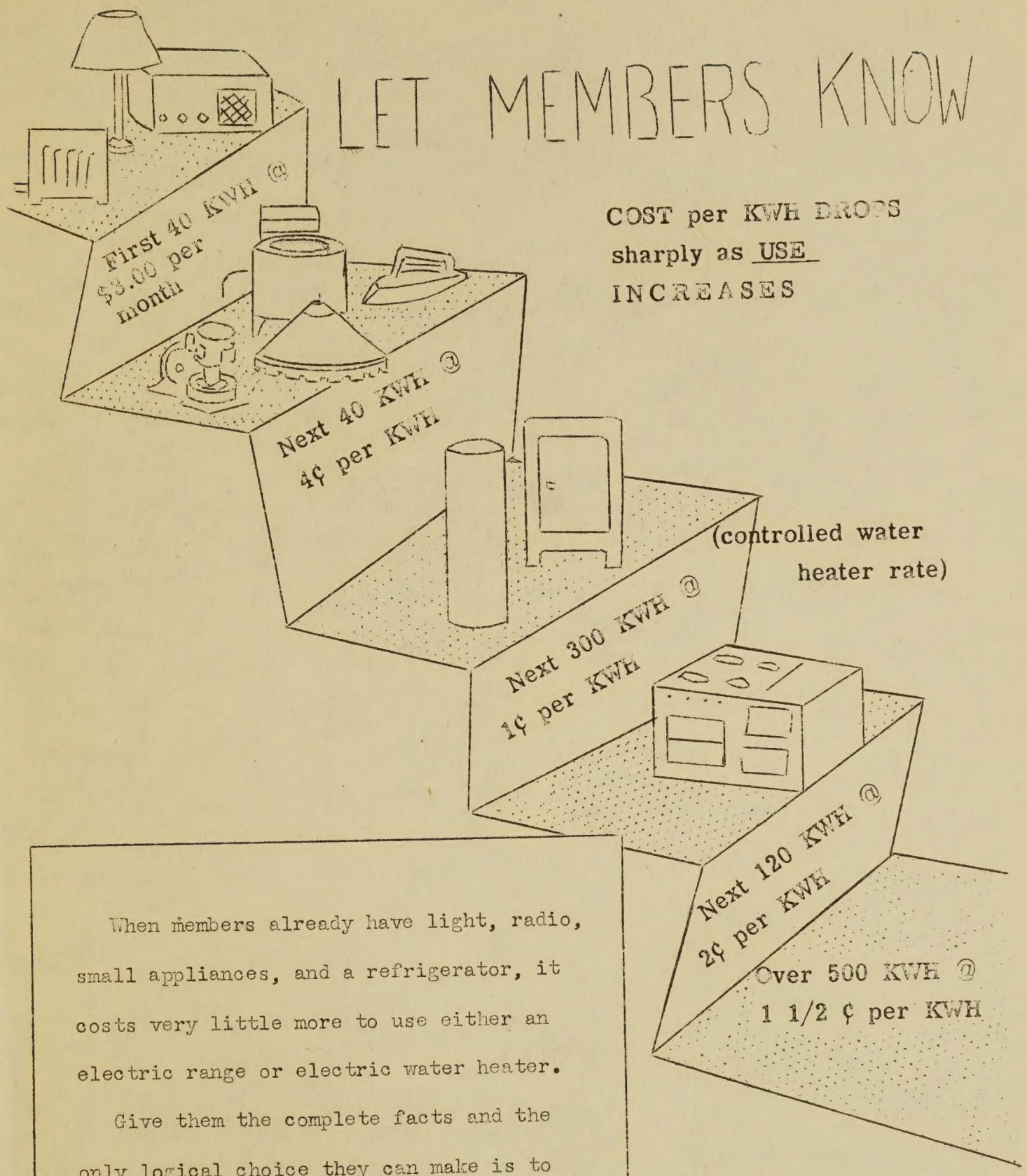
9. Circularize membership with electric range and water heater literature of the type suggested by NEMA, in the recent "GO All Electric" plan book.

10. Contact school officials in cooperative area regarding installation of all electric equipment for domestic science department or school lunch program.

Give them the complete facts concerning cooperative rates and electric appliances, and the only logical choice they can make is to

"GO ALL ELECTRIC"

LET MEMBERS KNOW



COST per KWH DROPS sharply as USE INCREASES

When members already have light, radio, small appliances, and a refrigerator, it costs very little more to use either an electric range or electric water heater.

Give them the complete facts and the only logical choice they can make is to

"GO ALL ELECTRIC"